NTSB National Transportation Safety Board

Future Safety Challenges: Remedies?

Presentation to:
Communicating for Safety

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<u>Outline</u>

– **NTSB 101**

– **Converging Runway Operations**

– **Wrong Airport Landings**

– **Display of Lightning Data**

– **Increasing Automation**

But Before I Begin . . . Kudos

– **O'Hare Arson Event -- Kudos to**
  • **Those of you who rose to the challenge and worked collaboratively to respond to the outage and to bring the system up again so quickly, and**
  • **Those of who were affected by the outage (which is probably many, if not most, of you) and rose to the challenge to handle the changes that resulted in your bailiwicks**

What the NTSB Does

- – **Independent federal agency, investigate transportation accidents, all modes**

- – **Determine probable cause(s) and make recommendations to prevent recurrences**

- – **Do not determine blame or liability**

- – **Independence**
  - • **Political: Conclusions and recommendations based upon facts and evidence rather than politics**
  - • **Functional: Impartial and unbiased because no "dog in the fight"**

<u>Purpose</u>

- **Single focus is *SAFETY***

- **Primary product: Safety recommendations issued to any entity that has authority to address the problem**

- **Response to recommendations:**
        > 80% acceptable

# Converging Runway Operations

– **The Problem**
  - **Mixed arrival and departure operations on intersecting runways have resulted in repeated near misses when go-arounds occur**

– **Typical Scenario**
  - **Arrivals to one or more runways**
  - **Departures on runway(s) whose flight paths intersect with arrival runway go-around flight path**
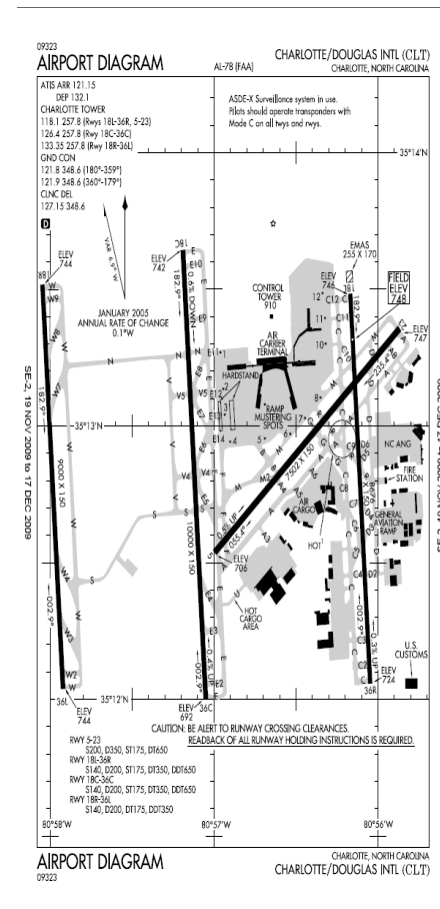 - **Go-around results in imminent separation issue**

Las Vegas Incident

- April 26, 2012

- Air carrier go-around on rwy 25L

- Learjet departure runway 19L

- Separation approximately 0.3nm and 100 feet
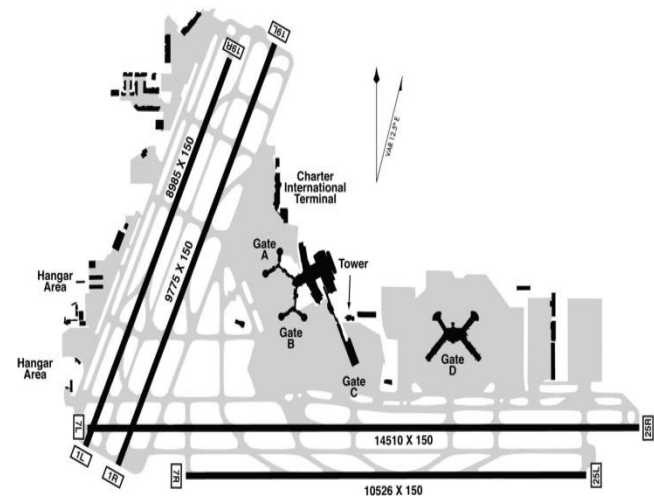
Charlotte Incident

- July 14, 2012

- Air carrier RJ go-around on rwy 23

- Air carrier RJ departure on rwy 18C

- Separation less than 400 feet laterally and 100 feet vertically

JFK Incident

- July 14, 2012

- Air carrier 737 go-around on rwy 22L

- Air carrier RJ departure on rwy 13R

- Arrival-departure "window" in effect
  - Window helps controller determine when departure is safe based upon location of arrivals

- Procedure not followed

- Separation about 0.3 nm laterally and 200 feet vertically

AIRPORT DIAGRAM
NEW YORK/JOHN F. KENNEDY INTL (JFK)
NEW YORK, NEW YORK
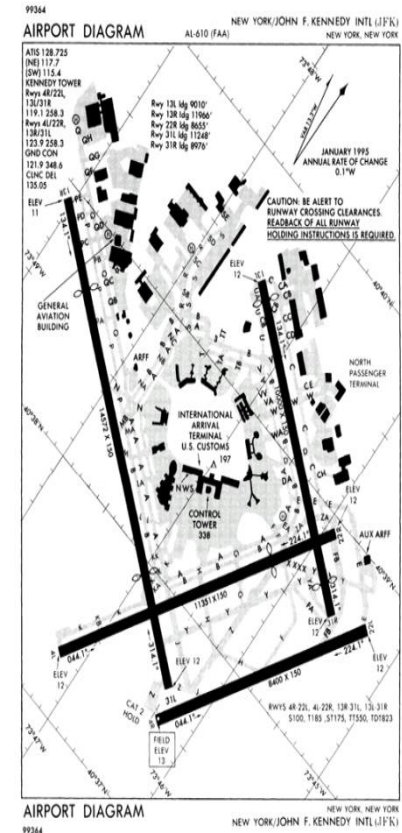
NTSB Concerns

– **No plan for ATC separation**

– **TCAS may be inhibited**

– **Visual separation may not be reliable**

– **"Surprise" need for evasive action during critical and busy phases of flight**

– **Aircraft performance limits**

FAA Actions

- Multiple events caused safety concerns

- Recorded FAA data for BOS, IAH, ORD, JFK, IAD, and CLT revealed about 40 similar events

- Terminal work group formed to mitigate significant safety risk

Wrong Airport Landings

– Flight crews may misidentify a nearby airport during approach

– Runway at the wrong airport may not be long enough or strong enough, other aircraft near the airport may be unaware of potential conflicting traffic

– Two incidents, within two months
  • Wichita, KS (2013) – Boeing 747 Dreamlifter landed at Col Jabara Arpt, about 9 miles north, rwy 6101'
  • Branson, MO (2014) – Boeing 737 landed at Taney County Arpt, about 7 mi. north, rwy 3738'

– NTSB Safety Alert issued

– Recommendations being developed

NTSB

Branson, MO: Luckily No Overrun

Display of Lightning Data

–   **Thunderstorms are a significant hazard**

–   **Lightning is more likely to reflect hazardous turbulence, as opposed to just heavy rain**

–   **American Eagle Flight 3224 (2010) and numerous others**

–   **NTSB recommendation to FAA: Incorporate real-time total lightning data on controller displays and in associated weather products for current and future display systems, and provide better lightning information in the cockpit**

NTSB

Present Status

- FAA organized a cross-organizational workgroup of subject matter experts to consider our recommendations

- Workgroup raised several issues about implementing our recommendations

- Resolution of issues is still underway

Increasing Automation

– **When it *malfunctions:***

  - **Increasing complexity increases likelihood that operators will not completely understand how to respond**
  - **Increasing reliability increases likelihood that operators have never seen a given malfunction before, even in training**
  - **If skills have eroded due to lack of use, query whether operator can take over if necessary**

– **When it's working *properly:***

  - **Adverse impact on professionalism?**

Recent Examples

- **Human/Automation Disconnect**
  - **Amsterdam, Holland (2009)**
  - **Rio to Paris (2009)**
  - **San Francisco (2013)**
  - **ATC examples?**

- **System Working As Designed**
  - **Many subway systems**

Remedy?

- **Automation has significantly improved**
  - **Safety**
  - **Efficiency**
  - **Reliability**
  - **Productivity**

- **Designers and operators still have a long way to go to better understand the human/computer interface**

Conclusion

– **We've come a long way**

– **Safety is a continuing journey, not a destination; we still have a long way to go**

– **New technologies may solve some problems, but often introduce new problems**

– **The best way to maintain continuous improvement by addressing these problems is to work collaboratively**

Thank You!!!

Questions?